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REMARKS/ARGUMENTS

Continued prosecution of this application in view of the accompanying petition and fees, the foregoing amendments, and the following remarks is respectfully requested.

Claims 1-4, 6-10, 12-22, 24, 25, 27-38, 40-43, and 45 remain in this application.

Claims 4, 6-10, 12-14, 30-33, 42, 43, and 45 stand allowed.

Claims 5, 11, 23, 26, 39, 44, and 46 have been canceled.

Claims 1, 2, 3, 15, 16, 20, 21, 24, 27, 28, 29, 34, 36, 37, 38, 40, and 41 have been amended to more clearly define the invention.

Claims 4, 6-10, 12-14, 17-19, 22, 25, 30-33, 35, 42, 43, and 45 are unchanged from the last amendment.

The rejection of claim 41 under 35 USC §112 is respectfully traversed. The recital of "said air" is supported by an appropriate antecedent in the parent claim.

The rejection of claims 34-38 as unpatentable over Vaughan 4,090,370 in view of Shum 4,658,597 is respectfully traversed.

The rejection of claims 1-3, 15-19, 20, 28, 29, 40, and 41 as unpatentable over Vaughan 4,090,370 in view of Schlom et al. 4,137,058 is respectfully traversed.

The rejection of claims 21, 22, 24, 25, and 27 as unpatentable over Vaughan 4,090,370 in view of Schlom et al. 4,137,058 and Curtis 4,674,295 is respectfully traversed.

When reference is made in these arguments to the claim recitals, it is for the purpose of identifying certain recitals so that they may be found quickly in the claims. These references are not quotations from the claims, and they should not be relied on as if they were such quotations. Such references are not made for the purpose of defining or changing the meanings of the claim recitals. These references are only intended to bring attention to the

fact that certain recitals are found in the claims. Not all of the claim recitals are addressed in these arguments. The full meanings of those few claim recitals that are noted in these arguments are not fully explored here. The references here to certain claim recitals are made only in the context of the applied patent references and the outstanding rejections, and they are not global or exhaustive in their scope, meaning, or content. The meaning of the claims can be ascertained only from the claims themselves.

The following will focus primarily on the independent claims. The dependent claims are no less patentable because they are not fully discussed here. The recitals of the dependent claims are readily apparent from the claims, and generally require little or no discussion.

With particular reference to claim 1, a cooler system is recited that includes turbulent air and distributed water on the wet side. The air streams from the dry and wet sides are combined at a location remote from the dry side and outside of the wet side. The resultant combined mass of air is delivered to a discharge site and discharged into a confined location. Related recitals are found in several other claims. These recited features of the present invention are not provided for an idle purpose. The relative humidity in the confined location is held below approximately 60 percent. As recited in certain other claims, the rate of water consumption is correspondingly low. One example of such a system is disclosed in Figs. 1 and 5, and in the supporting specification of the present application. The embodiment of Figs. 1 and 5 is , of course, not the only embodiment of this invention. The reduction in humidity achieved by the system disclosed in Figs. 1 and 5 is apparent, for example, from a review of Fig. 7 of the present application and the supporting specification. Fig. 7 reflects actual measured test data obtained on a system that embodies the system defined in claim 1. The low relative humidity and the low rate of water consumption are actual measured values.

Vaughan does not disclose or even remotely suggest a cooler system wherein a stream of air from the wet side of the cooler system is combined with a stream of air from the dry side of the cooler system at a location that is remote from the dry side and outside the wet side, all before delivering the combined mass of air to a confined location. Vaughan does not suggest that there would be any point to providing such a system. Vaughan does not recognize that there is any point to combining the streams after they leave the respective sides, but before they are delivered to a confined location. Vaughan does not recognize, and therefore, does not teach, that such a system has anything to do with limiting the relative humidity within the confined space to below approximately 60 percent, or with limiting the rate of water consumption. There is no combined stream configuration possible with Vaughan's system wherein the wet side stream does not pass through the dry side after it leaves the wet side. This is not accidental to Vaughan's disclosure. There is a specific disclosed reason for this arrangement. Vaughan specifically teaches (Col. 8, Lns. 62-64) that:

> "Cooling is accomplished with a high degree of efficiency when the dry air flow path is connected in series to the evaporation flow path as in Fig. 9."

The system disclosed by Vaughan, for example, in Fig. 1, does not teach the combining of wet and dry side streams except in the mode described in Fig. 9. According to the flow path shown in Vaughan's Fig. 9. there is a single stream that passes through first the wet and then the dry side. The operational modes of the system described in Fig. 1 are shown in Figs. 6 through 9. In the operational modes of Figs. 6 through 8, the streams are discharged separately from the system. In Fig. 6, there is no dry side stream. In Fig. 7, the wet and dry side streams are discharged separately from different locations into different parts of the same confined location. Any mixing takes place after the separate streams leave the cooling system. In Fig. 8, the dry side stream is discharged into the confined location, but the wet

side stream is not. It is clear that the wet side stream in Fig. 8 is not discharged into the confined location, because this would defeat the stated purpose of the mode illustrated in Fig. 8, namely, dehumidification. Only in the operational mode of Fig. 9 are the two streams combined, but the combination takes place by reason of the fact that one single stream is conducted through first the wet side and then the dry side. A review of Fig. 1 clearly shows that Vaughan does not disclose a system wherein two separate streams could be combined after they leave their respective sides and before they are discharged into the confined location. Even if air were to be drawn in through Vaughan's 37, and mixed with the stream from the wet side, the combination would take place before, and not after the combined streams pass through the dry side.

Fig. 9 exemplifies the only teachings in Vaughan concerning combining the wet and dry side streams before they are discharged. Why would a rountineer in the art disregard Vaughan's specific teaching (quoted above) that it is more efficient to connect the flow paths in series with the air flowing through the wet side first?

For cooling a confined space Vaughan teaches that the wet side stream is used only when humidification is desired. Compare, for example, Vaughan's description of Figs. 6-9, Col. 8, Lns. 10-68, and the labels on Figs. 6-9 themselves, with the air flow paths shown in these Figs. There is no teaching that it is possible to decrease the relative humidity or the rate of water consumption by running the two air streams in parallel and then combining them downstream of the two sides before discharging them.

As discussed previously, Schlom et al. 4,137,058 teaches, inter alia, that it is "essential" that the output from the wet side be free of dissolved salts or the like. See, for example, Col. 2, Lns. 42-45. This dictates certain fundamental design characteristics of the disclosed pre-cooler. Among these, the tube side is the wet side and the water flows in a thin film down the

inside walls of the tubes to avoid the formation of water droplets entrained in the vapor phase. See, for example, Figs. 5 and 6, and Col. 3, Lns. 10-15. In contrast, according to the present invention, a mass of distributed water is maintained on the wet side, and this is beneficial. The presence of such a mass of distributed water would be destructive of Schlom's equipment, and thus, an anathema. The present invention goes completely contrary to the teachings of this reference.

There is no reason or suggestion in the art for the proposed combination of references. In combining Schlom with Vaughan, a rountineer in the art would be required to pick between the wet side configuration of Vaughan and that of Schlom. Why would a routineer in the art elect to discard Schlom's explicit teachings that entrained water is to be avoided? There is no teaching upon which to base making this choice to arrive at the configuration proposed in the rejection of the present claims. If a routineer wanted to reduce the amount of water vapor in the combined streams, it would be more logical to use Schlom's wet side configuration, because that would at least eliminate the entrained liquid water. Certainly, if a routineer in the art wanted to minimize humidity the use of turbulent air and distributed water on the wet side would be avoided.

Claim 2 has been amended to correspond to the antecedent basis provided by claim 1.

Claim 3 has been amended to correspond to the antecedent basis provided by claim 1.

Claim 15 recites the combining of the respective wet and dry side streams at a location remote from the dry side, and that the resulting combined stream is discharged at a site that is different from the location where the streams are combined. The relative humidity is maintained below approximately 60 percent. For the sake of avoiding redundancy, the discussion above with respect to Vaughan and Schlom will not be repeated here. Attention is respectfully invited to that discussion, which is adopted and incorporated here.

Express Mail No. EV 540276696 US
Date of Deposit: March 7, 2005

Claim 16 has been amended to conform to the antecedent basis in parent claim 15.

Claim 20 recites an air conditioning system. That system includes the combining of the respective cooled and humidified streams at a location remote from the tube side and outside of the shell side. The resulting combined stream is discharged at a site that is spaced from the location where the streams are combined. A mass of distributed water is maintained on the shell side. For the sake of avoiding redundancy, the discussion above with respect to Vaughan and Schlom will not be repeated here. Attention is respectfully invited to that discussion, which is adopted and incorporated here. It is sufficient to note that the claimed system is contrary to the teachings of Vaughan, and would not result from any combination of Vaughan and Schlom that is suggested by the teachings of these references.

Claim 21 recites an air conditioning assembly. The wet side is configured to form finely divided water. This would be an anathema to Schlom, and is clearly contrary to the teachings of Schlom. The assembly is configured to discharge air from both the dry and wet sides into a conduit with the wet side air being discharged at a location remote from the dry side and outside of the wet side. The conduit is adapted to discharge the resulting combined stream of air into the interior of a structure at a site that is different from the location where the streams are combined. This is contrary to the teachings of Vaughan, because, according to Vaughan, it would not result in the efficiencies that Vaughan allegedly achieves from running the wet side air first through the wet side and then through the dry side. For the sake of avoiding redundancy, the discussion above with respect to Vaughan and Schlom will not be repeated here. Attention is respectfully invited to that discussion, which is adopted and incorporated here. Curtis was cited with respect to the recital of a plurality of wet side air moving members. Amended claim 21 includes, but is no longer limited to such a plurality of air moving members.

Claim 24 has been amended to be consistent with the antecedent provided by the parent claim 21.

Claim 28 recites an air conditioning system wherein a mass of distributed water is maintained on the wet side. The streams of air from the wet and dry sides are allowed to combine in a confined space that is remote from the dry side and outside of the wet side, and the combined mass of air is allowed to discharge into the interior of a structure at a site that is remote from the location where the streams are combined. For the sake of avoiding redundancy, the discussion above with respect to Vaughan and Schlom will not be repeated here. Attention is respectfully invited to that discussion, which is adopted and incorporated here.

Claim 29 has been amended to conform to the antecedent provided in parent claim 28.

Claim 34 recites an air conditioning system wherein a mass of distributed water is maintained on the wet side. A stream of humidified air is discharged into a stream of cooled air at a location that is remote from the dry side and substantially outside of the wet side. The resulting combined mass of air is allowed to discharge into the interior of a structure at a site that is substantially spaced from the location where combining takes place. The system is operated at a water consumption rate of less than approximately 10 percent that of a conventional swamp cooler. The system is operated on harvested ambient energy. For the sake of avoiding redundancy, the discussion above with respect to Vaughan and Schlom will not be repeated here. Attention is respectfully invited to that discussion, which is adopted and incorporated here. Most air conditioning systems can not be operated on harvested ambient energy. The power requirements for most air conditioning systems are too great. There is no suggestion in any of the references of record that there is any way to operate a system that

involves in part the evaporation of water at an evaporation rate that is less than approximately 10 percent of that of a comparable swamp cooler.

Claim 36 recites a process of air conditioning the interior of a structure that includes establishing a mass of air humidifying distributed water on a wet side. A stream of moist air from the wet side is injected into a stream of cooled air from the dry side at a location that is remote from the dry side and outside of the wet side to produce a combined stream. The combined stream is conveyed to a different site and discharged there into the interior of a structure. Ambient energy is harvested and applied to establishing at least one of the flows of air or the mass of distributed water. The system is operated at a rate of water consumption that is less than approximately 10 percent of that of a conventional swamp cooler under the same conditions. With exterior conditions of a temperature in excess of approximately 100 degrees Fahrenheit and a relative humidity of less than approximately 30 percent, the process maintains interior conditions with a temperature of less than approximately 85 degrees Fahrenheit and a humidity that is no more than approximately twice that of the exterior environment. There is no indication in any of the references of record that their operation could accomplish any of these conditions, let alone all of them. The inventive features that are defined by the recitals in this claim are not provided for an idle purpose. For the sake of avoiding redundancy, the discussion above with respect to Vaughan and Schlom will not be repeated here. Attention is respectfully invited to that discussion, which is adopted and incorporated here.

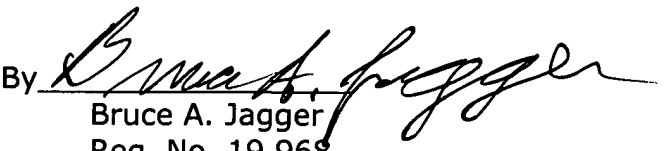
Claim 40 is drawn to an air conditioning system wherein a mass of finely divided water is maintained on the shell side of a tube and shell heat exchanger. Streams of cooled and humidified air are generated and combined at a location remote from the tube side and substantially outside of the shell side to produce a combined mass of air in a confined space.

Express Mail No. EV 540276696 US
Date of Deposit: March 7, 2005

The combined mass of is discharged into the interior of a structure at a site that is different from the confined space. For the sake of avoiding redundancy, the discussion above with respect to Vaughan and Schlom will not be repeated here. Attention is respectfully invited to that discussion, which is adopted and incorporated here.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,
BELASCO JACOBS & TOWNSLEY

By 
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